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EXAMINER

RAMPURIA, SATISH

ART UNIT PAPER NUMBER

2191

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/081,329

Applicant(s)

BARNETT ET AL.

Examiner

Satish S. Rampuria

Art Unit

2191

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Response to Amendment

1. This action is in response to the amendment received on 03/31/2005.
2. The objection to the Abstract, requiring to a single paragraph, is withdrawn in view of applicant's amendment.
3. The objection to claims 1-32, requiring to the full form of the abbreviation of the word conformance-test (CT), is withdrawn in view of applicant's amendment.
4. The rejection under 35 U.S.C. §101 to claims 1-11 is withdrawn in view of applicant's amendment.
5. Claims amended by the applicant: 1-32.
6. Claims pending in the application: 1-32.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 5, 7-14, 16, 18-25, 27, and 29-32 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,260,065 to Leiba et al. (hereinafter called Leiba).

Art Unit: 2191

Per claim 1:

Leiba disclose:

- A computer implemented method of conformance-testing a software implementation with a software specification (col. 3, lines 62-63 “a method ... software application”), the method comprising:
 - applying the software implementation and the software specification to produce a conformance-test enabled implementation (col. 2, lines 11-12 “performing compliance testing based on... requirements”) comprising portions of the software implementation and the software specification integrated into a same body of code (col. 2 lines 65-67 to col. 3, lines 1-24 “the execution engine... include a response analyzer for non-deterministic ordering of responses and ordering of components within the responses... analyzer... provides... for testing in... client sessions... include a test generator... according to an input specification... test generator... provide a stress test with stopping criteria for testing durability of the server application... test generator... include a test sequence derived from a state machine... test sequence... derived from the state machine based on probabilistic transitions... response analyzer...” wherein nondeterministic choices of the software specification result in assigning a corresponding choice of the conformance-test enabled implementation to a variable (col. 2, lines 28-31 “each response ...non-deterministic... responses... each response”); and
 - the conformance-test enabled implementation comprising a test that the variable comprises one of the nondeterministic choices of the software specification (col. 4, lines 7-10 “The analyzer component can be instructed to allow for permissible non-

Art Unit: 2191

deterministic ordering of responses and ordering of components within any given response”).

Per claim 2:

- the conformance-test enabled implementation comprising a test that the variable conforms to a condition on the nondeterministic choice specified in the software specification. The limitations are similar to those cited in claim 1 and rejected under the same rationale set forth in connection with the rejection of claim 1.

Per claim 3:

The rejection of claim 1 is incorporated, and further, Leiba disclose:

- the conformance-test enabled implementation comprising at least one first operation to carry out when the variable comprises one of the nondeterministic choices of the software specification (col. 2 and 3, lines 65-67 and 1 “the execution engine... include a response analyzer for non-deterministic ordering of responses and ordering of components within the responses”); and
- the conformance-test enabled implementation comprising at least one second operation to carry out when the variable does not comprise one of the nondeterministic choices of the software specification (col. 2, lines 34-37 “specifying responses associated with the at least one command to be saved and used for subsequent commands and comparisons to the expected responses”).

Art Unit: 2191

Per claim 5:

The rejection of claim 1 is incorporated, and further, Leiba disclose:

- including in the conformance-test enabled implementation instructions of the software implementation to synchronize the state of variables of the software implementation with the state of variables of the software specification (col. 7, lines 8-10 “the analyzer 215 fetches an expected response, given in the TIF, and a server response, from a proxy 216 or a previously stored response from a variable, and compares the two tokens for equality”).

Per claim 7:

Leiba disclose:

- A computer implemented method of conformance-testing a software implementation with a software specification (col. 3, lines 62-63 “a method ... software application”), the method comprising:
- producing a software object organized such that a step of the software specification and a corresponding code section of the software implementation are integrated in the software object (col. 2, lines 5-8 “providing configuration information and a sequence of test commands to the server application with response requirements for expected responses associated with each of the commands”); and
- the software object comprising at least one instruction which, when executed by a computer system, causes an identification of a mandatory call comprised by the software specification to be stored in a memory of the computer system (col. 2, lines 45-49

“expected responses... marked as one of a mandatory response, an optional response, a forbidden response, several mandatory responses and several optional responses for permitting testing of various types of responses, various types of test data and varied implementations of the server application”).

Per claim 8:

The rejection of claim 7 is incorporated, and further, Leiba disclose:

- the software object comprising at least one instruction which (col. 2, lines 56-58 “test processor... includes parser... for parsing and checking test instructions input to the test processor”), when executed by the computer system (col. 2, lines 59-60 “test instructions into objects and an execution engine for executing objects”), causes a test that the state of a conformance-test enabled implementation conforms to the software specification during the mandatory call (col. 2, lines “response of the server application upon execution of the instructions are compared to expected responses included in the test instructions to determine conformance” and col. 2, lines 45-49 “expected responses... marked... a mandatory response, an optional response... of the server application”).

Per claim 9:

- modifying the software comprising the mandatory call method with instructions which, when executed by the computer system, cause instructions of the software object to be executed to test that the state of the conformance-test enabled implementation conforms to the software specification during execution of the mandatory call method. The

limitations are similar to those cited in claim 8 and rejected under the same rational set forth in connection with the rejection of claim 8.

Per claim 10:

- including in the conformance-test enabled implementation instructions of the software implementation to synchronize the state of variables of the software implementation with the state of variables of the software specification. The limitations are similar to those cited in claim 8 and rejected under the same rational set forth in connection with the rejection of claim 8.

Per claim 11:

The rejection of claim 7 is incorporated, and further, Leiba disclose:

- including in the conformance-test enabled implementation instructions of the software implementation to synchronize the state of variables of the software implementation with the state of variables of the software specification (col. 7, lines 8-10 “the analyzer 215 fetches an expected response, given in the TIF, and a server response, from a proxy 216 or a previously stored response from a variable, and compares the two tokens for equality”).

Claims 12-14 and 16 are the computer program product claims corresponding to method claims 1-3 and 5 and rejected under the same rational set forth in connection with the rejection of claims 1-3 and 5 above.

Art Unit: 2191

Claims 18-22 are the computer program product claims corresponding to method claims 7-11 and rejected under the same rationale set forth in connection with the rejection of claims 7-11 above.

Claims 23-25 and 27 are the apparatus claims corresponding to method claims 1-3 and 5 and rejected under the same rationale set forth in connection with the rejection of claims 1-3 and 5 above.

Claims 29-32 are the apparatus claims corresponding to method claims 7-11 and rejected under the same rationale set forth in connection with the rejection of claims 7-11 above.

Substantially as claimed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 4, 6, 15, 17, 26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leiba in view of US Patent No. 6,321,376 to Willis et al. (hereinafter called Willis).

Per claim 4:

The rejection of claim 1 is incorporated, and further, Leiba does not explicitly disclose compiling the software implementation from a first high-level language into an intermediate language; compiling the software specification from a second high-level language into the

Art Unit: 2191

intermediate language; and producing the conformance-test enabled implementation in the intermediate language.

However, Willis discloses in an analogous computer system compiling the software implementation from a first high-level language into an intermediate language; compiling the software specification from a second high-level language into the intermediate language; and producing the conformance-test enabled implementation in the intermediate language (col. 7 and 8, lines 60-67 and 1-3 “FIG. 4... the formal language specification is parsed into a specification intermediate (Block 31), then a test case compiler creates a compiled test case generator, potentially using an intermediate programming language manifestation of the generator and associated programming language compiler (both within Block 50) to yield an executable generator... resulting compiled generator (Block 51) produces test cases in a manner functionally equivalent to the interpretative generator (Block 32)”).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the method of compiling software implementation / specification from high level language into an intermediate language as taught by Willis in corresponding to the method of verifying software applications using conformance test as taught by Lieba. The modification would be obvious because of one of ordinary skill in the art would be motivated to compile software implementation / specification from high level language into an intermediate language to provide an efficient way of performing conformance testing as suggested by Willis (col. 2, lines 38-53).

Per claim 6:

The rejection of claim 1 is incorporated, and further, Leiba does not explicitly disclose including in the conformance-test enabled implementation instructions of the software implementation to provide the choice of the conformance-test enabled implementation corresponding to the nondeterministic choice of the specification.

However, Willis discloses in an analogous computer system including in the conformance-test enabled implementation instructions of the software implementation to provide the choice of the conformance-test enabled implementation corresponding to the nondeterministic choice of the specification (376 col. 5 and 6, lines 65-67 and 1-4 “Choices... arise during generation... a production... occur a variable number of times or when one of several exclusive productions (non-terminal or lexical tokens) may be exercised... formal specification must provide some means by which the formal specification author may denote allowable choices in context and/or strategy or the generator may implicitly supply a choice and strategy”).

The feature of providing the choice of the conformance test implementation corresponding to the nondeterministic choices of the specification would be obvious for the reasons set forth in the rejection of claim 4.

Claim 15 and 26 are the computer program product claims corresponding to method claim 4 and rejected under the same rationale set forth in connection with the rejection of claim 4 above.

Claim 17 and 28 are the computer program product claims corresponding to method claim 6 and rejected under the same rationale set forth in connection with the rejection of claim 6 above.

Response to Arguments

7. Applicant's arguments with respect to claims have been considered but they are not persuasive.

In the remarks, the applicant has argued that:

- (i) Leiba fails to anticipate the limitation "comprising portions of the software implementation and the software specification integrated into a same body of code" as amended in each of independent claims 1, 7, 12, 18, 23, and 29.
- (ii) For claims 4 and 6, Office action has failed to carry the burden of establishing obviousness.

Examiner's response:

- (i) Regarding the limitation "comprising portions of the software implementation and the software specification integrated into a same body of code", Abe system does teach the software implementation and the software specification included into the same code (see rejection above. However, this feature is inherent, conformance testing is a way of verifying implementations of a specification to determine whether or not deviation from the specification exist when all deviations and omissions are eliminated, the implementation conforms to the specification. Applicant only makes general allegations. Therefore, the rejection is proper and maintained herein.
8. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by

Art Unit: 2191

combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the examiner has shown why the one skilled in the art would be motivated and where the reference, Willis has suggested (see previous office action and the rejection above).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Satish S. Rampuria** whose telephone number is **(571) 272-3732**.

Art Unit: 2191

The examiner can normally be reached on **8:30 am to 5:00 pm** Monday to Friday except every other Friday and federal holidays. Any inquiry of a general nature or relating to the status of this application should be directed to the **TC 2100 Group receptionist: 571-272-2100**

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Tuan Q. Dam** can be reached on **(571) 272-3695**. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Satish S. Rampuria
Patent Examiner
Art Unit 2191
6/27/2005



ANTONY NGUYEN-BA
PRIMARY EXAMINER